

Strike Out!

By Capt. Mark Bosley, USMC

The flight began as a typical instrument flight for intermediate-advanced jet training. We had completed an uneventful practice ILS at Laredo International and were flying direct to WAADE, the IAF for the TACAN at NAS Kingsville. Houston Center had cleared us to climb to 17,000 feet, and we were setting up for a practice turn in holding before commencing the approach. As we leveled off, we set cruise power, discussed the finer points of entering the holding pattern, and switched to NAS Kingsville ATC.

The weather was mostly VFR, with a few medium-sized towering cumulus in the area. Rougher weather had passed through earlier in the afternoon, moving well to the north before we took off. We penetrated clouds as quickly as we exited them, but my student didn't care because he was "under the bag," flying his instruments. As we went IFR into one of the taller cumulus buildups, I saw a small flash of light to our right. It was no more intense than what you would expect from the flashbulb of a camera. I thought one of my mirrors had caught a final glint of sunlight before we penetrated the cloud, but then I heard a sound, like gravel being poured onto a tin roof. The sound made me think we had penetrated into hail, but I realized the sound was coming over my headset. I adjusted the volume on the radios and isolated the sound to extreme static on our comm 2, which is tuned to Kingsville strike ops. I still had good reception with ATC on comm 1, so I turned down the volume to hear what was coming over the ICS and with ATC.

That's when I thought, "Flash of light, and comm 2 goes dead—did we just get hit by lightning?"

When I was the aviation-safety officer at VT-21, I had read a hazrep concerning one of our T-45 instructors being hit by lightning and losing the engine on a cross-country flight. I immediately checked the engine

instruments, and I saw the rpm steadily winding down through 70 percent, with exhaust-gas temperature (EGT) decreasing through 400 degrees. I hoped the student was pulling power to slow to our 200-knot holding speed, but, as my hand rested on the throttle to use the ICS button, I didn't feel it move from the cruise-power setting. I keyed the ICS and said, "I have the controls."

As we completed our verbal three-way change of controls, I added a little power to stop the decreasing rpm—but it kept dropping. I added a little more power, but it still kept dropping. I now was in total denial; I went to mil power. The rpm and EGT continued to drop, and airspeed kept decreasing through 220 knots. I keyed the ICS and said, "We just lost our engine."

As I lowered the nose to maintain airspeed, I called ATC to declare an emergency. The engine spooled down through 45 percent, and the generator went offline, which tumbled our primary attitude and heading indicators. Still IMC, I scanned the standby attitude indicator to keep us upright.

Because of the lightning strike and engine loss, I called Kingsville ATC and declared an emergency. I asked for no-gyro steers for an emergency straight-in approach. I selected throttle off to prepare for an immediate airstart.

Since we already were headed toward Kingsville,



the steer was only a few degrees to our left. I made the turn while pressing the gas-turbine-starter (GTS) button and brought back the throttle to the idle position. All I could do was maintain enough airspeed for the relight at 230 knots, fly the steering instructions from ATC, and wait for the relight. I remember thinking how much I did not want to eject.

I planned an assisted airstart, using the GTS to power the air-turbine starter, hoping for a good relight. After a few more seconds—but what seemed like much longer—the rpm slowly rose, finally making it to flight idle around 71-percent rpm. We still were IMC, and I wasn't sure about the weather en route Kingsville—we hadn't received the ATIS information. I set power to 86-percent rpm and prepared for an emergency-oil GCA. I was locking the throttle friction to keep from accidentally moving my power setting when we broke out of the clouds and into VMC conditions. (Postflight analysis of the aircraft's air-data recorder showed from the time of the lightning strike to engine shutdown and relight had been only 27 seconds.)

After setting the engine power, I reset the systems lost during shutdown, mainly the generator and hyd 2, and I secured the now still running GTS. As the generator reset, our attitude and heading indicators came on. The wet compass had aligned to the proper

heading. I told ATC I was VMC with a good relight and wanted to proceed visually for a straight-in precautionary approach. This approach calls for an 80-percent-power setting. Reluctant to change from the 86 percent I had set for the GCA, and possibly lose the engine again, I maintained the higher setting. I would use configuration changes to control my airspeed: selecting full flaps and idle earlier in the profile. I had some time to breathe and just navigate for the final for the 13s at Kingsville. I let the airspeed build to 310 knots in the descent, wanting to get back to home field as quickly as possible.

At this point, I remembered I had a crew member with me. I asked my student to break out his pocket checklists and to read the engine-restart procedures to me to see if I had missed anything. As he looked up the appropriate checklist, ATC asked if I would like an arrested landing. My first reply was "no," but I almost immediately changed that to a "yes," thinking I'd hate to encounter a problem on a high-speed landing with directional control or loss of braking during an emergency landing. ATC said to expect the arresting gear. I was thankful for all the help they had provided me. After reviewing the engine-restart procedures, I had my student turn to the short-field-arrestment procedures. We quickly went through all items, and we were ready to

begin our precautionary approach into NAS Kingsville.

With the field in sight, ATC directed us to contact tower. With a “roger, and thanks for the help,” we switched to tower and began our profile for runway 13R. The hook was down, and we were on profile but a little fast because of the higher power setting. I selected full flaps and idle early to begin the flair. I advised my student to secure any loose items in preparation for the arrested landing. As we touched down, approximately 400 feet from the arresting gear, I keyed the ICS and said something along the lines of, “Get ready for the trap.”

We crossed the gear—no arrestment. We had good directional control, and the brakes seemed fine, but I was a little disappointed at the anticlimax of our adventure. While

we decelerated, I wondered why we hadn’t grabbed the wire. I remembered other T-45 pilots had said the hook will ride a few inches above the ground on a non-carrier field landing, and you have to feed in back-stick pressure to aerodynamically “squat” the jet to get a good arrestment.

I finished my rollout and exited the runway. After a quick call to maintenance, asking if they wanted the engine shut down, I was cleared to taxi back to the line. Our postflight walk-around showed a large burn on top of the vertical stabilizer. A closer inspection also showed a series of smaller strikes along the starboard side, starting near the nose and ending just beneath the front cockpit.

As with any emergency, handled successfully or

not, **lessons are learned.** Lesson one in this incident focused on better crew coordination. As a former AV-8B pilot, we single-seaters tend to have that “I’ll handle it” mentality, especially when it comes to emergencies. As soon as I realized what was happening after the lightning strike, I was busy doing things. I had forgotten completely, until later in the flight, about the help I could have gotten from my back-

seater. I should have let my student pilot know what was happening and what I was doing.

The next lesson has to do with complacency. Until you shut down and climb out, the emergency still is in progress. I relaxed too much after touchdown, expected the arrested landing, and remembered



too late about the possibility of missing the gear because of the high ride of the hook. Keep thinking “what if” until you exit the aircraft.

The final point is not so much a lesson learned as a good piece of advice: Read hazreps. Your squadron safety department should have many hazreps on file—and even a few select ones available for ready-room reading. As the ASO, I had read many, including one related to the previous lightning strike and engine failure. The reports can provide good lessons learned from the experiences of others and, as it did in my case, potentially reduce reaction time and make for fast troubleshooting. 🦅

Capt. Bosley flies with VT-21.